# CALIFORNIA STATE SCIENCE FAIR
# 2016 PROJECT SUMMARY

**Name(s)**
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**Project Number**
36591

**Project Title**
## Solar Powered Desalination

**Abstract**

**Objectives/Goals**
The objective is to determine if salt water can be turned into fresh water using only the power of the sun and if certain surface materials are more effective than others.

**Methods/Materials**
Four identical plastic containers, funnels, straws, plastic cups, rubber bands, Styrofoam bases and cling wrap with tape were used to construct each apparatus. Aluminum foil placed on hangers was used to create parabolic reflectors on each apparatus. Different surface materials were placed under each container. These materials were black paper, white paper, aluminum foil and Blu-ray DVD discs. Each container was filled with ocean water having the same properties. All four apparatus were placed on a table in the sun all day. The clean water which was produced in each cup connected to each container was measured at the end of each day. There were a total of 13 experiments conducted.

**Results**
Black paper was the surface material which produced the largest volume of water on 9 of the 13 days tested. The Blu-Ray DVD discs produced the most water on 2 days and on one day the black paper and Blu-Ray surface had the exact same volume. The black paper absorbed more heat from the sun and produced the most water on a consistent basis, more than the other three surface materials.

**Conclusions/Discussion**
Solar powered desalination may be part of the solution to the water shortage in California with the added benefit of not producing additional CO(2) in the process. Testing different surface materials and their properties to absorb and reflect heat can help improve the efficiency of these technologies and the amount of water produce over a given period of time. In this specific experiment black paper produced the most water followed by Blu-ray discs. Future studies on incorporating the properties of these two materials or other materials into solar powered desalination technologies may make them more efficient. One day solar powered desalination may become part of a viable solution to our problem.

**Summary Statement**
I proved that ocean water can be turned into fresh water using solar powered desalination and that using black paper in the process produced the most fresh water.

**Help Received**
The idea of the project came from the Science Buddies website as did some of the materials. An article about researchers at Northwestern University gave me the idea for testing Blu-ray DVD discs. My science teachers helped provide examples on how to improve my project as did my father.